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# FURTHER STUDIES ON THE SYSTEMATICS OF AUSTRALIAN DIPLURINAE (ARANEAE: MYGALOMORPHAE, DIPLURIDAE): THE TAXONOMIC STATUS OF *PROSHERMACHA* SIMON AND *CHENISTONIA TEPPERI* HOGG

By Barbara York Main
Zoology Department, University of Western Australia, Nedlands, W.A. 6009.

## Abstract

*Proshermacha* Simon, formerly placed in the Ctenizidae is transferred to the Diplurinae (Dipluridae). The two species *P. tigrina* Simon and *P. subarmata* Simon are regarded as conspecific. *Proshermacha* is synonymised with *Chenistonia* Hogg. *P. tigrina* and *subarmata* are tentatively synonymised with *Chenistonia tepperi* Hogg. The systematic confusion of the *Chenistonia tepperi* "superspecies" in south-west Western Australia is discussed.

## Introduction

A study of the systematics and biology of Australian mygalomorphs was begun by the author in 1952. As this work developed, the biological prominence of the Diplurinae compared to other groups of mygalomorphs, in several geographic regions of the continent became apparent. However, at the same time the taxonomy of the group proved exceptionally difficult and attributing names to biologically distinct populations was frequently impossible. This was due to two reasons. Firstly some of the early descriptions of species were inadequate, some genera and species were unnamed, certain types were lost or temporarily "missing" and access to types which could be located was difficult. At that time loans were not permitted from several major institutions both in Australia and overseas, where many Australian types were deposited. Perforce, visits to the relevant institutions had to be made in order to examine such types. Secondly, the Diplurinae in Australia are complex due to a long evolution in isolation which has resulted in numerous convergences. Many species, and even genera, although distinguishable on biological criteria, exhibit confusing morphological parallels, especially of female specimens. Thus my study of systematics of the Diplurinae has been long and tedious and many of the taxonomic problems are only now beginning to be solved.

My taxonomic study of the Mygalomorphae was initially planned as a monograph and much information has been accumulated and manuscript descriptions of many species set aside until such time as generic revisions would appear to be reasonably complete. However a monographic presentation is impractical and some results have already appeared in smaller papers. This paper is the sixth in a series dealing solely with systematics of the Diplurinae. Earlier publications in which I described or reviewed genera or species of Diplurinae are: Main (1954, 1969, 1972, 1975, 1977 and in press, a) and Main and Mascord (1969).

The purpose of this paper is to discuss the taxonomic status of *Proshermacha* Simon and the *Chenistonia tepperi* superspecies.

The following abbreviations of depositories are used: BMNH, British Museum of Natural History; ZMB, Zoologisches Museum Berlin; ZMH, Zoologisches Museum Hamburg.

### Status of *Proshermacha*

Simon (1908) erected the genus *Proshermacha* to contain two species, *tigrina* and *subarmata*, from southwest Western Australia. The description of *P. tigrina* is more complete and precedes that of *subarmata.* Although he did not designate *tigrina* as the type of the genus, Simon clearly regarded it as the type species in that he described *subarmata* only in respect of how it differed from *tigrina.* Rainbow (1912) incorrectly designated *subarmata* as the type species with which designation Petrunkevitch (1928) and Bonnet (1958) concurred. In accordance with Article 69 (a) (iii) and (vi) of the International Code of Zoological Nomenclature, Rainbow's designation, although arguably incorrect must be accepted.

Simon placed the genus in the group (or tribe) Nemesieae in the Ctenizidae, mainly on the basis of the bipectinate superior tarsal claws but also because he regarded the bristles on the chelicerae as a rastellum. Examination of one of the syntypes of *P. tigrina* and three syntypes of *subarmata* has revealed that the specimens although having bipectinate superior claws, do not possess a rastellum. Carapace, abdomen, spinnerets, sternum, labium and maxillae of one syntype (from Harvey) are illustrated (Figs 1-3).

Carapace lengths of syntypes are as follows: *P. tigrina*, 3.25 mm; *P. subarmata*, Harvey, 3.6 mm, Wooroloo, both specimens 3.0 mm. Cheliceral teeth: *P. tigrina*, 7 promarginal and a few basal; *P. subarmata*, Harvey, 7 promarginal and 13 (and 12) basal right and (left) respectively.

The bipectinate superior tarsal claws and the relatively long posterior lateral spinnerets, with tapering terminal segment, indicate that the specimens are not ctenizids but diplurines. In addition, the following combination of features suggests that the species belong in *Chenistonia* Hogg: a straight or slightly recurved fovea; pronounced eye tubercle; teeth on only inner margin of cheliceral furrow plus a basal group of granule like teeth; marginal sternal sigilla; mottled pattern on dorsum of abdomen; scopula on at least anterior tarsi and metatarsi; a pair of proximal ventral spines on palp tarsus. All are juvenile specimens and thus specific identity is difficult. Nevertheless they appear to be conspecific and from the characters noted, combined with the localities from which the specimens were collected it is deduced that they probably belong to the species currently identified as *Chenistonia tepperi* Hogg. Although Hogg had five syntypes from four localities, only two ("cotypes") from Ardrossan (in the British Museum of Natural History) can be traced. Thus Ardrossan, which happens also to be the first listed locality, is designated as the type locality.

### Genus *Chenistonia* Hogg

*Chenistonia* Hogg, 1901. Type species by original designation: *Chenistonia maculata* Hogg 1901.

*Proshermacha* Simon, 1908. Type species by subsequent designation (Rainbow 1912): *Proshermacha subarmata* Simon 1908. **New Synonymy.**

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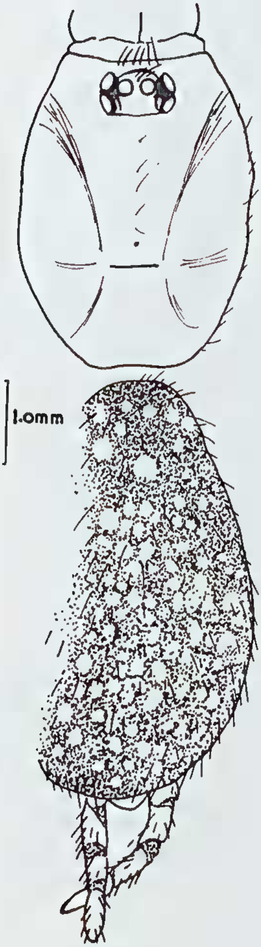

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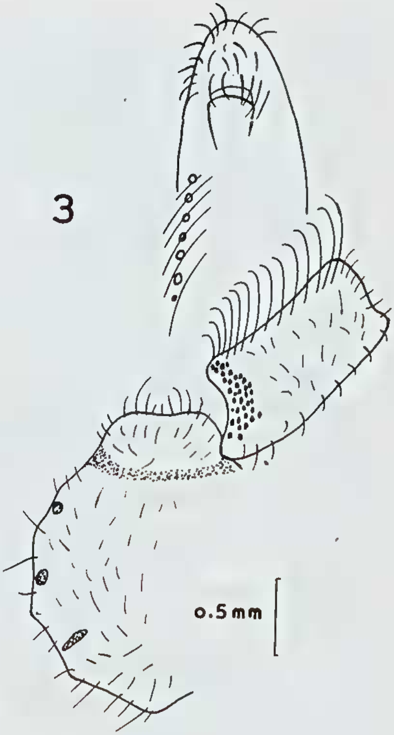

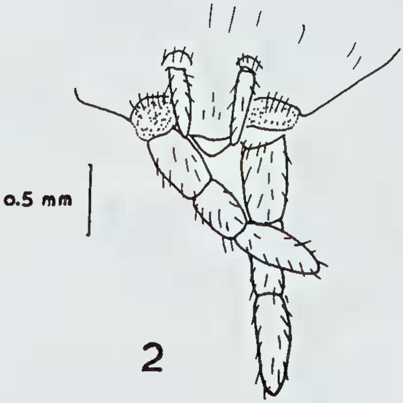

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Figs 1-3. Syntype (Harvey) of *Proshermacha subarmata* Simon: (1) carapace and abdomen, dorsal view, (2) spinnerets, ventral view, (3) sternum, labium, maxillae and chelicerae. (Note extrusion of spinnerets exposing membranous areas in dorsal view).

### *Chenistonia tepperi* Hogg

*Chenistonia tepperi* Hogg, 1902, p. 137. Five female syntypes from Ardrossan, Kangaroo Island, Burnside and Blakiston, South Australia. Two female "cotypes" from Ardrossan (BMNH, examined), other syntypes lost.

? *Proshermacha subarmata* Simon, 1908, p. 364. Three syntypes, all juveniles, 1 from Harvey, Western Australia (ZMH, examined), 2 from Woorooloo, Western Australia (ZMB, examined). **New Synonymy.**

? *Proshermacha tigrina* Simon 1908, p. 363. Female syntype from Serpentine, Western Australia (probably originally in ZMH, lost). Juvenile syntype from Jarrahdale, Western Australia (ZMB, examined). **New Synonymy.**

### Identity of the *Chenistonia tepperi* superspecies

*Chenistonia tepperi* as at present delimited is distributed in southern Australia from the west coast to Adelaide (Main 1972, 1976 and in press, b) and includes several offshore islands e.g. Rottnest and Kangaroo Islands. In the western part of its range it comprises at least two behavioural forms which may represent distinct species (unpublished field data, documentation in preparation as part of the revision of the genus *Chenistonia*). It is not possible from the juvenile specimens of *Proshermacha* to state which behavioural form of *Chenistonia* they represent. The common and widespread form (designated race "A") builds a deep, sinuous burrow and appears to be continuous across the range of the "superspecies" and is at present regarded as *Chenistonia tepperi.* The other form (designated race "B"), which can be differentiated in life on colour (it is black instead of fuscous), builds a shallow burrow, frequently under logs. Male characters of both forms are similar. This complex of "races" comprising the "superspecies", i.e. a South Australian form which is more or less continuous with race "A" of the two Western Australian races (which are sympatric in the northern jarrah forest) cannot at present be resolved. Further field observations are required, and correlations made, of data so acquired, with subtle morphological distinctions. However, in the meantime there is a great deal of pressure for identifications of this species complex from practically-orientated bodies, such as forestry and mining concerns and biologists conducting fauna surveys in relation to rehabilitation of landscapes and establishment and management of parks. Consequently, an immediate appraisal of the taxonomy of this group, although inconclusive, is required.

A nomenclatural problem associated with synonymising *Proshermacha* with the *Chenistonia tepperi* "superspecies" arises from the uncertainty of the status of the various populations of this "superspecies", e.g.: (a) There is one South Australian species (*Chenistonia tepperi* Hogg) and (b) There are two Western Australian biological populations (race "A" and race "B") of which one or both may be conspecific with *Chenistonia tepperi* (at present they are both identified as part of the *Chenistonia tepperi* "superspecies").

The alternative nomenclatural solutions are dependent on the status of these populations which is still uncertain, e.g., there are three possibilities: (i) Both the Western Australian populations, race "A" and race "B", are conspecific with *Chenistonia tepperi* Hogg. (ii) Only one of the Western Australian populations, race "A", is conspecific with *C. tepperi* and the other one, race "B", is a distinct species. Thus two species in W.A.: one continuous across the southern part of Western Australia and South Australia (= *Chenistonia tepperi*) and one (= unnamed species) restricted to the northern jarrah forest of southwest Western Australia. (iii) Neither Western Australian population is conspecific with *C. tepperi.* Thus three species: one restricted to South Australia (= *C. tepperi*) and two in Western Australia [race "A" = *Chenistonia intricata* (Rainbow and Pulleine) which until now I have regarded as a synonym of *C. tepperi* (unpublished) and race "B", an unnamed species].

From field observations and my collections the second "solution" is favoured as there does appear to be a continuous population of one of the biological "forms", i.e. race "A" (documentation in preparation). If the third "solution" is correct several names are available. If also my present opinion that the three following species are conspecific remains unaltered and is correct, then each name is available in the following order of precedence:

*Aname maculata* Rainbow and Pulleine 1918, p. 151
*Aname intricata* Rainbow and Pulleine 1918, p. 157
*Chenistonia auropilosa* Rainbow and Pulleine 1918, p. 160

Taking the first available name, this would raise problems of priority and homonymy since the type species of *Chenistonia* is *C. maculata* Hogg from Macedon, Victoria (Hogg 1901). Therefore the next available name is *intricata.*

Returning to *Proshermacha* the significant point is that whatever the specific status of the two *Proshermacha* species the genus *Proshermacha* becomes a synonym of *Chenistonia.* If *C. tepperi* stands for both the Western Australian populations [solution (i) above] then there is no problem of nomenclature and the species names *tigrina* and *subarmata* become synonyms of *C. tepperi.* However if there are two Western Australian species [solution (ii) above] it would not be possible to know with certainty with which species *P. subarmata* is conspecific (i.e. *C. tepperi* or the "unnamed") because of the juvenile state of the *Proshermacha* specimens *but conspecificity with tepperi is most probable.* Finally, if solution (iii) above regarding the status of the *Chenistonia* species is correct then the name *subarmata* has priority over the three names discussed above, i.e. *A. maculata, A. intricata* and *C. auropilosa.* However there would still remain the problem whether *P. subarmata* is conspecific with race "A" (= *C. intricata*) or race "B" (unnamed *Chenistonia* sp.).

Consequently, it becomes impossible to attribute with certainty the specific name *subarmata* to a population. Furthermore, the names *Proshermacha tigrina* and *subarmata* have not been cited, except in catalogues, since erection of the genus in 1908. While recognising *Proshermacha* as a synonym of *Chenistonia* the most practical approach is to disregard the specific names *subarmata* and *tigrina*, although strictly speaking they cannot be considered as *nomina oblita* under the present terms of the International Code of Zoological Nomenclature.

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